

REMARKS

I. Change of Correspondence Address

In accordance with the Associate Power of Attorney filed on June 1, 2006, Applicant's request that all future correspondence related to the above-captioned matter be directed to the undersigned.

II. Restriction Requirement

In the Office Action of December 7, 2005, the Examiner made the restriction set forth in the Restriction Requirement mailed May 13, 2005 final stating that Applicant's "traversal is on the ground(s) that 'no serious burden' would be involved in examining all of the distinct inventions together" and that "this is not found persuasive because a proper traversal must point out the alleged error in holding the restrictions to be patentably distinct." As stated in MPP §818.03(a), "the reply by the Applicant or Patent Owner must be reduced to a writing which distinctly and specifically points out the supposed errors in the Examiner's action and must reply to every ground of objection and rejection in the prior Office Action...." MPEP §808.03(a) further states that "under this rule, the Applicant is required to specifically point out the reasons on which he or she bases his or her conclusions that a requirement to restrict is an error." As stated in MPP §808, "every requirement to restrict has two aspects; (A) the reasons (as distinguished from the mere statement of conclusion) why each invention as claimed is either independent or distinct from the other(s); **and** (B) the reasons why there would be a serious burden on the Examiner if restriction is not required, i.e., the reasons for insisting upon restriction therebetween as set forth in the following sections." (Emphasis added). That is, where there is no serious burden on the Examiner, at least one of the requirements for restriction has not been satisfied.

In Applicant's request to rejoin the claims of Groups I and II in the Response of June 13, 2005, Applicant's remarks were intended to direct the Examiner's attention to the fact that regardless of which claim group Applicant elected, a search of each of the

classifications identified would necessarily be required. Accordingly, a restriction between the claims of Groups I and II would result in increasing the Office's burden by requiring duplicative searches, as compared to concurrent examination of the claim of the alleged groups. Furthermore, the Examiner's insistence upon the restriction between the claims of Groups I and II, as identified in the restriction requirement of May 13, 2005, and made final in the Office Action of December 7, 2005, fails to consider the amendments to the non-elective claims in the Response of June 13, 2005. For example, claim 15 was amended to call for, in part, "the heat exchanger of claim 1". As stated in MPEP §806.05(c)(I), "Where a combination **as claimed** sets forth the details of the subcombination **as separately claimed**, there is no evidence that combination AB_{sp} is patentable without the details of B_{sp}." (Emphasis in original.) The section continues "The inventions are not distinct and a requirement for restriction must not be made or maintained, **even if the subcombination has separate utility.**" (Emphasis added). As such, in accordance with the MPEP, Applicant requests rejoinder of the claims of Groups I and II as identified in the Restriction Requirement of May 13, 2005.

Even further, inasmuch as the Restriction Requirement of May 13, 2005 failed to address claims 39-49, the restriction requirement was incomplete. In the Office Action of December 7, 2005, the Examiner further restricted claims 39-49 as "drawn to an invention distinct from the elected invention (heat exchanger and method) because the claimed heat exchanger could be used for other methods not involving combustion." Upon consideration of the amendments to the claims presented herein, the Examiner's basis of restriction of this claim set is also rendered moot. Applicant has amended the previously elected claims to further define the heat exchanger as having at least one input connected to a combustion system. Upon consideration of the claims presented herein, rather than merely the preambles thereof, Applicant respectfully requests the rejoinder of the restricted claims. Furthermore, upon consideration of the claims as

amended herein, and in light of the further restriction of claims 39-49, Applicant requests a subsequent, non-final action to address any remaining restriction issues.

III. Claim Rejection Based on Prior Art

a. Recapitulation of the Invention¹

The invention relates to a method of heating and a heating system having a heat exchanger and a combustion apparatus. The heat exchange is fluidly connected to the combustion system and thermally communicates heat associated with the combustion flow to the fluid intended to be heated. A plurality of plates are constructed to provide efficient thermal communication between the fluid to be heated and the combustion flow and are oriented to maintain fluid isolation between the flows.

b. Claim Rejections under 35 U.S.C. §102(b)

The Examiner rejected Claims 1-6, 8-10, 13, 14, 24-29, 31-33, 36-38, 53, 55-62, 64, 65, 68 and 69 under 35 U.S.C. §102(b) as being anticipated Fayette. Applicant has amended the independent claims of the above-captioned application to further define that which is called for therein. Claim 1 has been amended to call for, in part, an enclosure having at least one input connected to a combustion system and at least one output connected to atmosphere for a first stream of fluid and at least one input connected to a fluid to be heated and at least one output connected to the fluid to be heated for a second stream of fluid. Claim 1 further calls for at least three plates secured within said enclosure. Fayette discloses a plate for constructing a plate heat exchanger which includes a plurality of plates that "are associated with one another by butt-welding of the ends of the bent edges and the vertical-edges." Abstract. Fayette further states that "the blocks 1 inside which the fluids circulate are characterized, as is clearly apparent in Fig. 3, in that they present superposed channels 18, 19 opening out alternatively in the lateral chambers and extending over the whole width of each block."

¹ This Section III(a) is intended to provide the Examiner with some background information on the state of the art and applicants' contribution to it. It is *not* intended to distinguish specific claim for the prior art. That task is performed in Section 3b below.

C.3, ll. 46-50. Fayolle further states that “as shown in Fig. 5, additional plates 30, for example, corrugated ones, may be inserted in the channels formed, which not only perform the role of a reinforcing element increasing the resistance, but also control the turbulence of the fluids and their pressure drop and improve the coefficient of heat exchange.” Col. 4, ll. 17-23. Fayolle continues that “cleaning of the assembly is facilitated by the fact that said interposed plates may easily be removed.” Col. 4, ll. 24-25. That is, the plate exchanger of Fayolle is constructed to have liquid fluids passed therethrough and a corrugated partitioning plate disposed in the flow passages thereof. Furthermore, Fayolle discloses that the corrugated panels are removable for cleaning of the assembly. Fayolle discloses a liquid fluid heat exchanger and not a heat exchanger connected to a combustion system as called for in claim 1. Accordingly, that which is called for in claim 1 is not disclosed in Fayolle.

Applicant has also amended claim 24 to further define that which is called for therein. As amended, claim 24 calls for, in part, providing at least three plates and adapting the plates to transfer heat generated from combusting one of said streams to at least one other of said streams. As argued above with respect to claim 1, Fayolle does not disclose adapting the plates to transfer heat generated from combustion of a fluid flow therethrough.

Applicant has also amended claim 56 to further define that which is called for therein. As amended, claim 56 calls for, in part, an apparatus having a combustion mechanism and at least two streams of fluid, wherein one stream of fluid is mixed with fuel and ignited within the apparatus and another stream of fluid is acquired from an environment to which it is returned. As argued above, with respect to claims 1 and 24, Fayolle does not disclose a combustion mechanism constructed to generate the desired heat. Furthermore, as Fayolle is plainly directed to a liquid fluid heat exchanger, one with ordinary skill in the art would not be motivated to combine a combustion system with the plate exchanger thereof. Accordingly, Applicant believes claims 1, 24, and 56, and the claims that depend therefrom, respectively, are patentably distinct over Fayolle.

The Examiner next rejected claims 7, 11, 12, 30, 34, 35, 63, 66 and 67 under 35 U.S.C. §102(b) as being anticipated by Murray. Each of these claims is a dependent claim. It is unclear whether the Examiner rejected these claims and the claims from which they depend as being anticipated by Murray or intended to reject the claims under 35 U.S.C. §103(a) as being obvious over Fayolle in view of Murray. Nonetheless, for substantially the same reasons as argued above, Applicant believes claims 1, 24, 56, and the claims that depend therefrom, are patentably distinct over Murray, Fayolle, or the combination thereof. Specifically, Murray discloses a heat interchanger which is used to preheat combustion gas. That is, Murray states, “the products of combustion from a furnace or the like, can be passed through a multiplicity of passages, while air, for example, to support combustion in a furnace, is passed through adjacent passages so as to preheated by contact with the hot walls or plates defining the passages.” Pg. 2, ll. 14-22.

As shown in Fig. 5, Murray discloses a heat interchanger having a first fluid flow, indicated with an x' , having an inlet port 50 and an outlet port 52 and a second fluid flow, indicated with a y' , having an inlet port 60 and an outlet port 61. In accordance with the disclosure of Murray, at least one of outlets 52, 61 is fluidly connected, via a furnace, to inlet 50 or inlet 60. Comparatively, the present invention is a heat **exchanger** wherein the invention of Murray is a heat **interchanger**, i.e., a pre-heater. That is, the flow that is heated by the system of Murray is directed to the combustion system to improve the efficiency of the combustion process. Comparatively, the claims of the present invention call for fluid flows that are fluidly isolated from the inlet to the outlet of the systems defined in the claims. That is, whereas the system of Murray must include an outlet that is fluidly connected to an inlet of the heat interchanger, the claims of the present invention call for, in part, fluid flows that are isolated from one another.

For example, claim 24 calls for, in part, disposing the plates to accommodate intraplate flow of at least two streams of fluid, wherein one stream of fluid is mixed

with fuel, ignited, and directed past a side of the at least three plates and vented and another stream of fluid acquired from a fluid to be heated, directed past an alternate side of each of the at least three plates, and returned to the fluid to be heated. The claims define the heaters and heat exchangers called for therein as having distinct fluid flows. As disclosed in the Specification, it is often desirable to maintain the separation between the combustion fluid flow and the flow of the heated fluid. Accordingly, at least for the reasons set forth above, the heating system as defined by the claims as amended herein is not disclosed by Murray or Fayolle, or taught or suggested by the combination thereof. Accordingly, Applicant believes that which is called for in claims 1 and 24 is patentably distinct over the art of record.

Claim 56 has also been amended to further define that which is called for therein. As amended, claim 56 calls for, in part, an apparatus wherein one stream of fluid is mixed with fuel and ignited within the apparatus and another stream of fluid is acquired from an environment to which it is returned. As argued above with respect to claims 1 and 24, such a system is simply not disclosed in the art of record. As such, Applicant believes claim 56, and the claims that depend therefrom, are patentably distinct over the art of record.

With respect to the Examiner's informal objection to claims 53 and 55 as failing to satisfy 35 U.S.C. §112, second paragraph, Applicant has amended these claims to further clarify that the output of the heat generating devices called for in the claims is in BTU/hr, or British thermal units per hour, units. Accordingly, Applicant believes that the amendments to claims 53 and 55 resolve the issue as raised at page 3, paragraph 3 of the December 7, 2005 Office Action.

In light of the amendments presented herein, Applicant believes claims 1-14, 24-38, 53, and 55-69 are patentably distinct over the art of record. Furthermore, in light of the remarks and amendments herein with respect to the non-elected claims, Applicant believes rejoinder of claims 15-23, 39-50, 52 and 54 is appropriate. Accordingly, Applicant believes claims 1-14, 24-38, 53, and 55-69 are in condition for allowance.

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Inventor: R. Terry Wornath
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Furthermore, upon rejoinder of claims 15-23, 39-50, 52 and 54, for those reasons set forth herein, Applicant believes these claims are also patentably distinct over the art of record at least for reasons similar to those provided. As such, Applicant believes that claims 15-23, 39-50, 52 and 54 are also in condition for allowance.

Therefore, Applicant respectfully requests a Notice of Allowance of 1-50 and 52-69. The Examiner is hereby authorized to pay the extension fee of \$1,020 associated with entry and consideration of this Amendment/Response with fees acquired from Deposit Account No. 50-1170.

Upon consideration of the amendments and remarks presented herein, the Examiner is cordially invited to contact the undersigned should any matters remain unresolved which would hinder the allowance of the above-captioned application.

Respectfully submitted,

By: /Kirk L. Deheck/
Kirk L. Deheck
Reg. No. 55,782
Direct Dial 414-225-9755
Email: kld@boylefred.com
Attorney for Applicant
Boyle, Fredrickson, Newholm, Stein &
Gratz
250 East Wisconsin Avenue
Suite 1030
Milwaukee, WI 53202
414 225-9755